

CLAIMS

1. A method for the determination of the effects of variable sag of a supporting element of a support system on an image of a slice of a subject, comprising:
 - 5 (a) acquiring an image of a slice subject at an imaging position; and
 - (b) determining said sag of said support element at said imaging position.
2. A method according to claim 1, further comprising adjusting said image to compensate for said determined sag.
- 10 3. A method as in claim 2 in which said acquired image is used for determining said sag.
4. A method as in claim 3 in which a quantity of radiation absorbing material, which is large enough and dense enough to create a clear and measurable image in an imaging device, is
 - 15 used in determining said sag.
5. A method as in claim 4 in which said quantity of radiation absorbing material is comprised in said supporting element.
- 20 6. A method as in claim 2 in which said acquired image is a CT image.
7. A method as in claim 2 in which said acquired image is an NM image.
8. A method for the determination of the effects of variable sag of a supporting element of a support system on an image of a slice of a subject, comprising:
 - 25 (a) determining the sag of said supporting element at at least one longitudinal position of said supporting element, different from the imaging position of said supporting element at which said image of a slice is acquired; and
 - (b) using said sag determined at said at least one longitudinal position of said
 - 30 supporting element different from said imaging position to determine said sag at said imaging position.

037/01748

9. A method as in claim 8 in which at least one quantity of radiation absorbing material, which is large enough and dense enough to create a clear and measurable image in an imaging device, and which is located at at least one longitudinal position different from said imaging position, is used for determining said sag at said imaging position.

5

10. A method as in claim 8, further comprising adjusting of said image to compensate for said determined sag.

11. A method as in any of claim 9 in which said image is an NM image.

10

12. A method for the correction of the effects of different sags of a supporting element on more than one image of one slice of a subject, comprising:

11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

15

- (a) acquiring at least one image of said slice at an imaging position;
- (b) acquiring another image of said slice at a different imaging position;
- (c) determining the sag at at least one of said imaging positions;
- and
- (d) aligning said acquired images based on the determined sag.

13. A method as in claim 12 in which at least one of said images is an NM image.

20

14. A method as in claim 12 in which at least one of said images is a CT image.

15. A method according to claim 14 wherein determining the sag is performed on said CT image.

25

16. A method as in claim 12 comprising determining the sags of said supporting element at both of said imaging positions, and aligning said acquired images.

30

17. A method according to claim 16 in which said aligning of said acquired images is performed by aligning said images to an arbitrary level.

18. A method according to claim 12 wherein said sag at one of the imaging positions is

assumed to be zero.

19. A method according to claim 12 wherein the determination of said sag of said slice at one imaging position is performed by calculation based on said sag of said supporting element determined at another imaging position.
20. A method according to claim 12 comprising the adjustment of said images to compensate for the difference between said sags at said two imaging positions.
21. A method according to claim 19 comprising the adjustment of said images to compensate for the difference between said sags at said two imaging positions.
22. A method according to claim 12 wherein at least one of said images is a CT image.
23. A method according to claim 12 wherein at least one of said images is an NM image.
24. A method according to claim 12 wherein said image of said slice, of which said sag is determined, is a CT image, and said other image is an NM image.
25. A method according to claim 24 in which at least one quantity of radiation absorbing material, which is large enough and dense enough to create a clear and measurable image in an imaging device, is used for determining said sag of said supporting element at said position at which sag is measured.
26. A method for the correction of the effects of different sags of a supporting element on more than one image of one slice of a subject, comprising:
 - (a) acquiring at least one image of said slice at an imaging position;
 - (b) acquiring another image of said slice at a different imaging position;
 - (c) determining the sag at at least one of said imaging positions;
 - (d) aligning said acquired images based on the determined sag.
 - (e) calculation of said sag based upon the following model: a support element of length S is extended beyond its base by an extension a , the remainder of said support element, which

- is the supported part of the support element, is of length L ; the distance of said imaged slice from supported edge of the support element is Z ; said support element is assumed to be of uniform deformation constant EJ dependent on the material and geometry of the supporting element; the load distribution of the support element with the subject is effectively
- 5 approximated by an linearly equally distributed weight q along the length of said support element; and using the equation

$$K = \frac{q}{24EJ} = \frac{-W}{L^4 \left[\left(4 \frac{a^3}{L^3} - \frac{a}{L} + 3 \frac{a^4}{L^4} \right) - \left(4 \frac{a^2}{L^2} - 1 + 4 \frac{a^3}{L^3} \right) \left(1 + \frac{a}{L} - \frac{Z}{L} \right) + \left(1 + \frac{a}{L} - \frac{Z}{L} \right)^4 \right]}.$$

27. A method for the correction of the effects of different sags of a supporting element on more than one image of one slice of a subject, comprising

(a) the accumulation of data from a plurality of various measurements of sag in a plurality of various situations, and

(b) the utilization of said accumulated data to estimate the sag of a slice of a subject in a particular situation.

28. A method for the correction of the effects of variable sag of a supporting element of a support system on an image of a subject, comprising:

(a) measuring the sag of the support element at a plurality of positions and under a plurality of controlled loads;

- (b) storing these sag measurements;

(c) estimating the sag at an imaging position and under the load of a subject using said stored sag measurements; and

(d) adjusting an image taken of said subject at said imaging position to compensate for the estimated sag.